constituents of this venom. It is only just to Calmette to add that Martin's criticism, of course, only applies to the serum as he was able to obtain it as imported into Australia ; and Martin himself is careful to add that the specimens he had access to were only possessed of very feeble powers.

Wehrmann's valuable memoir, to which we so frequently have referred in the foregoing brief *résumé* of some of the latest contributions to the ever-increasing domain of preventive medicine, is a record of experiments carried out under the inspiration of Calmette in the Institut Pasteur at Lille. It is full of experimental data, and no attempt is made to formulate theories on the facts recorded, only at the close the following suggestion is to be found :—"Enfin nous voyons que les sérums des animaux immunisés contre l'un quelconque des poisons que nous avous étudiés sout fréquemment curatifs à l'égard des autres.

"Ces phénomènes d'action réciproque préventive, neutralisante *in vitro* et curative, apportent un argument de plus en faveur de la théorie cellulaire de l'immunité. . . . Il faut bien en conclure que la notion de spécificité des toxines et des sérums antitoxiques est loin d'être aussi étroite qu'on l'avait cru jusqu'à ces derniers temps." G. C. FRANKLAND.

THE RECENT PERSEID METEORIC SHOWER.

THIS display appears to have been of rather a special character on August 11, and to have attracted a considerable amount of attention. At any rate, during the thirty years in which I have witnessed returns of the shower, I have never known it to have been so generally observed. Many people, quite unaware that such a phenomenon was in progress, on looking up and admiring the singular beauty of the night, noticed the meteors. They were so numerous and occasionally so brilliant that they were watched for a considerable time.

Usually the maximum of the shower occurs on August 10, but on that date the atmosphere was, on the whole, unfavourable this year, and at the majority of stations not many Perseids appear to have been observed. The following evening came in under vastly improved conditions, the stars shone with remarkable lucidity, and it was quite an ideal night for the observation of meteors. To this circumstance, and to the fact that the shower was really a strong one, perhaps coming a little later than usual, is to be ascribed its marked prominence.

In the twilight at 8h. 58m. a splendid meteor brighter than Jupiter was seen in the S.S.W. sky, moving very slowly and almost horizontally westwards amongst the stars of Ophiuchus and Serpens. It threw off a thick train of yellow sparks, but, when near ε Serpentis, the nucleus, after a sudden accession of brilliancy, collapsed, and I thought the whole thing had vanished until, in the same direction of motion, a star-like fragment became visible and travelled some 8° further. It moved very much slower than the earlier and brighter part of the meteor had done, and looked like a mere spark sailing along on the wind. This meteor was also observed at Slough and other places, and it will be possible to obtain some interesting deductions respecting it. It was manifestly not a Perseid ; its leisurely flight being directed from the region of Pisces and Aquarius.

At 10 p.m. I began watching the eastern sky, and immediately found that the Perseids, with their swift motions and phosphorescent streaks, were in strong evidence. During the 4½ hours ending 2.30 a.m. on August 12 I saw 106 of them, but I believe that a continuous watch of the sky would have enabled twice this number to have been counted. Whenever bright meteors appeared, or others were observed with great exactness, they were carefully registered ; and during these intervals, when attention was distracted from the sky, many Perseids must have escaped my notice. I think that one observer might have counted quite 50 meteors per hour in an uninterrupted view of the sky on the night of August 11.

I endeavoured to ascertain the position of the radiant point as precisely as possible, and obtained it at hourly intervals from the best observed paths in the region immediately surrounding it. The results were as follow :—

	h. h.	Radiant.	
Aug. 11,	10 to 11	47° + 58°	21 meteors
,,	11 to 12	46½ + 58	22 ,,
,,	12 to 13	46 + 57	20 ,,
,,	13 to 14	46 + 57½	18 ,,

The mean is at 46°·4 + 57°·6, which I believe is well within 1° of probable error. The centre was defined with tolerable sharpness, for all the registered paths intersect within an area of about 4° diameter.

Some conspicuous meteors were observed during the night, though no really large fireballs appeared. It may be advisable to give the apparent courses of the brighter objects, for some of them must certainly have been seen by other observers, many of whom were watching the sky on the same night.

G.M.T.	Mag.	Path		Length of path.
h. m.		From	To	
8 58	> ♃	259° − 2°	231° − 1¼°	28°
10 9	1	56 + 64	65 + 67	5
10 16	♃	200 + 61½	206 + 44½	17
10 45	♃	240½ + 62½	237 + 47	15½
10 49	1	37½ + 66	30 + 70½	5
10 57	> 1	21 + 26	16 + 11¼	15½
11 12	1	359 + 78½	295½ + 77¼	13
11 26	> 1	12½ + 15	7 + 0½	15½
11 35	1	50 + 67	54 + 71	4½
12 15½	1	27¾ + 37	25 + 30½	7
12 19½	1	2½ + 57½	348 + 54	9
12 23½	♃	14½ + 29	6 + 13	17½
12 39	1	13½ + 19	9 + 8	12
13 11	♃	20½ + 1	18 − 11	12½
13 29	> 1	46 + 31	46 + 19	12

With the exception of the first, all these were Perseids.

It is satisfactory to note that reports from other quarters show that the display was very successfully observed. Prof. Herschel, at Slough, describes the rate of appearance and general brightness of the meteors on the night of August 11 as considerably greater than on other dates, and mentions having mapped 80 observed paths between 10½h. and 14h. Four of the Perseids observed at Bristol were also recorded by him at Slough, and he finds their radiants very definitely and distinctly marked at about 46° + 58°.

At Paris, it appears that very favourable conditions prevailed on August 10, so that Mlle. Klumpe, at the Observatory, succeeded in observing 200 shooting stars. The display is stated to have begun at sunset and to have continued with "amazing rapidity" until sunrise. It is estimated that altogether at least 600 shooting stars were noticed. W. F. DENNING.

NOTES.

THE proposal made at the Toronto meeting of the British Association last year, for a marine biological station in the Dominion of Canada, is taking practical shape. Such a proposal has been in the minds of Canadian biologists for many years, and Prof. Prince, the Dominion Commissioner of Fisheries, reported at length upon the necessity for such a marine station for Canada in the Marine and Fisheries Blue Book, 1894, and the Royal Society of Canada also urged the importance of the matter; but it was not until the British Association appointed a Committee consisting of Prof. E. E. Prince (Ottawa), Chairman; Prof. Penhallow (Montreal), Secretary; and Prof. A. B. Macullum (Toronto), Prof. John Macoun (Ottawa), Prof. Wesley Mills (Montreal), Prof. E. W. MacBride (Montreal), and Dr. W. T. Thiselton-Dyer, that active steps were taken to carry cut the scheme. An influential deputation waited upon the Hon. Sir Louis Davies, Minister of Marine and Fisheries, in April last, and during the recent session of the Canadian Parliament a vote of 3000*l.* was practically sanctioned, 1400*l.* being granted for the year 1898-99. A Board of Management has been chosen as follows: Prof. E. E. Prince (nominated by Sir Louis Davies to represent the Department of Marine and Fisheries) to act as Director, Profs. Penhallow, MacBride (McGill University), Ramsey Wright (Toronto University), L. H. Bailey (New Brunswick University), Rev. F. A. Huart (Laval University, Quebec), and members from Queen's University, Kingston and Dalhousie University, Halifax, Nova Scotia.

IN the death, on August 7, of Prof. James Hall, of Albany, the United States loses its most distinguished geologist at the ripe age of eighty-seven. Born at Hingham, Massachusetts, on September 12, 1811, James Hall became attached to the study of natural history in early life, and gained much instruction at the Polytechnic Institute at Troy. In 1836 he was appointed one of the geologists on the Cadastral Survey of the State of New York, and was charged later on with the palæontological work. Eventually he became State Geologist and Director of the Museum of Natural History at Albany. His published papers date from 1836, and he is the author of numerous reports on the geology and palæontology of various portions of the United States and Canada. His chief work has been the description of the invertebrate fossils of New York, a work comprising eight quarto volumes published 1847-94. Forty years ago he was awarded the Wollaston Medal by the Council of the Geological Society of London, and it was then pointed out how he had shown that the organic remains of the earliest rocks in America bore strong resemblance to those of this country. Ten years previously (1848), he had been elected a Foreign Member of the same Society. Prof. Hall was a man of great energy and untiring industry, and only last year he journeyed as far as St. Petersburg to take part in the meeting of the International Geological Congress.

AN appeal which should be given the active and generous support of the scientific world has been made by Dr. F. T. Bond, of Gloucester, Secretary of the Jenner Society. The Vaccination Bill, which received the Royal Assent on Friday last, makes it incumbent upon those who believe in vaccination to establish an organisation which will systematically defend it against the assaults of anti-vaccinatists. "It was to carry on this work" (explains Dr. Bond) "that the Jenner Society was established more than two years ago, in the year of the Jenner centenary, both as a memorial of that great investigator and as a means of meeting the agitation against vaccination which the Anti-Vaccination League had for so many years been, without opposition, carrying on. During that time the Society has distributed a large amount of literature; it has procured the insertion in newspapers in all parts of the country of some hundreds of articles and letters in reply to the correspondents whom the Anti-Vaccination League maintains to disseminate its views; it has organised two important manifestoes on the subject of vaccination, one from the medical officers of health of the country, and the other from the county of Gloucester, and it has done its best to promote the emendation of the Vaccination Bill. Want of funds alone restricts its efforts. It has a large amount of instructive material ready for publication and circulation, which it cannot bring forward for want of means, and if it had not been for the liberality of the representatives of the medical profession it could not have carried on its work at all. If that work is to be maintained and extended, as it ought to be, the non-medical public must support it with at least as much liberality as the opponents of vaccination have hitherto subsidised the Anti-Vaccination League." It is to be hoped that this appeal will meet with every encouragement, so that the Society shall be able to make its operations felt over an extensive field.

THE fiftieth anniversary of the foundation of the American Association for the Advancement of Science will be held next week at Boston. The meeting promises to be a very successful one, and a large number of papers have been received for reading in the various sections. The general programme has already been described in NATURE (July 7), but a few new items may be referred to here. In the Section of Chemistry the papers will be taken in groups as follows:—Analytical Chemistry, led by Dr. P. De P. Ricketts, Columbia University; Teaching of Chemistry, Dr. F. P. Venable, University of North Carolina; Inorganic Chemistry, led by Dr. H. L. Wells, Yale University; Organic Chemistry, Dr. Ira Remsen, Johns Hopkins University; Physical Chemistry, Dr. T. W. Richards, Harvard University; Physiological Chemistry, led by Dr. E. E. Smith, New York; Agricultural Chemistry, led by Dr. H. A. Weber, Ohio University; Technical Chemistry, Dr. N. W. Lord, Ohio State University. The Section of Mathematics and Astronomy is to be favoured with the following reports on recent progress (accompanied with statements of some of the "standing problems"), prepared on the special invitation of the officers and committee, "with a view to obtaining at this anniversary meeting such a survey of the field as may lead to a possible co-operation of effort": Report on the recent progress in the dynamics of solids and fluids, by Dr. Ernest W. Brown; report on theory of invariants—the chief contributions of a decade, by Prof. Henry S. White; Report on the recent progress in the mathematical theory of electricity and magnetism, by Prof. Arthur G. Webster; Report on the modern group-theory, by Dr. G. A. Miller; meteorology from a mathematical and physical point of view, by Prof. Cleveland Abbe. There will be several joint meetings of sections for the discussion of subjects of mutual interest, and every effort is being made to make the meeting worthily commemorate the Association's jubilee, and at the same time advance the interests of science in the United States.

THE retirement of Prof. J. R. Eastman, of the United States Naval Observatory, is announced in *Science*. Prof. Eastman has been continuously connected with the observatory since 1862.

THE death is announced of M. J. M. Moniz, known by his investigations of the natural history of Madeira, where he died on July 11 at the age of sixty-six.

DR. WILLIAM PEPPER, of Philadelphia, the author of many works on medical and other scientific subjects, died a few days ago. Dr. Pepper was prominent in many of the public institutions in Philadelphia, and did much to assist scientific, educational and medical progress in that city.

WE regret to see the announcement of the death of Mr. J. A. R. Newlands, to whom belongs the credit of the discovery of the periodic relations between the atomic weights of the elements. In the year 1887 Mr. Newlands was awarded the Davy Medal of the Royal Society in recognition of his work.

THE death is announced, at Oran, of a distinguished French mining engineer. M. Pomel. He was professor of geology at the Algiers Scientific School, director of that school from 1883 to 1888, and ex-president of the French Geological Society. M. Pomel leaves a number of special works, among which may be mentioned "Le Sahara" and "La Carte Géologique de la Province d'Oran."

THE young male giraffe from Senegal, which was one of the latest additions to the menagerie in the Zoological Society's Gardens, has just died. This rare animal cost the large sum of 900*l*.

A REUTER telegram announces that the screw schooner *Godthaab* sailed from Copenhagen on Wednesday morning for Angmagsalik, in East Greenland, with an expedition under First Naval Lieutenant Amdrup. The expedition, which has been fitted out by a scientific institute at a cost of 150,000 kroner, is provisioned for two years. Its object is to explore the east coast of Greenland between the 66th and 70th degree north latitude, with Angmagsalik as its starting-point.

DURING the latter part of the last, and the beginning of the present week, some high shade temperatures have been recorded over the southern and central parts of England. The weather conditions have been generally anti-cyclonic, the barometer standing at about 30·5 inches over the eastern half of the Baltic, and exceeding 30 inches over the Continent and the south-east of England, with very little differences in the readings over considerable areas. On the 12th the shade temperatures at several stations varied from 80° to 85°, and these readings have been since reached or exceeded, 87° having been registered on several days in the neighbourhood of London, while in the sun's rays the thermometer has exceeded 140°. During the night of the 15th and 16th a sharp thunderstorm occurred over the south-eastern parts of England and in Yorkshire; but the rainfall reported to the Meteorological Office was nowhere heavy, the greatest amount (0·4 inch) being registered in Yorkshire.

A NEW genus, *Limnocarpus*, has been founded by Mr. Clement Reid for the fruit of an aquatic plant, which occurs throughout the Oligocene strata of the Hampshire Basin (*Journ. Linnean Soc.*, vol. xxxiii.). The type-specimens of this plant, which is allied to *Potamogeton* and *Ruppia*, were obtained from the Lower Headon beds of Hordle cliff.

THE address delivered by M. Grimaux at the recent meeting of the French Association for the Advancement of Science at Nantes is printed in full in the *Revue Scientifique* of August 6. The subject of the address was "La Chimie des infiniments petits"—the new chemistry which was founded by Pasteur, who demonstrated that a host of obscure reactions are due, directly or indirectly, to micro-organisms. M. Grimaux indicated some of the chief results obtained in this branch of scientific inquiry, and pointed out the main features of the work of Pasteur and of the host of disciples who are developing, extending, and completing the work of the master. The meeting at which M. Grimaux was to have delivered the address was unfortunately marred by the expression of hostile public feeling against the distinguished president of the Association, on account of the position he had taken in a case which has lately caused much commotion in France. At the opening ceremony of the Association, M. Grimaux was unable to deliver his address, so violent and noisy were the manifestations against him. Finally, the address was delivered before members of the Association in one of the local schools, to which the public were not admitted. It is deeply to be regretted that a man of scientific distinction and high reputation should have received such an unpleasant reception merely on account of his support of M. Zola in the protest against the sentence on ex-Captain Dreyfus. The words used by M. C. A. Laisant, the secretary of the Association, in concluding his report upon the work and progress of the year, should have been taken to heart by that section of the Nantes public which have brought discredit upon the city by the recent manifestations; they are:—"Soit dans l'étude de ces questions si importantes pour l'intérêt du pays tout entier, soit dans les excursions qui charmeront les uns par l'attrait de la nouveauté ou qui rappelleront à d'autres les souvenirs de leur jeunesse, soit enfin dans vos travaux de sections, consacrés à la science pure, vous vous sentirez de plus en plus attachés à notre chère Association, qui nous rapproche tous dans un culte commun de la vérité, et qui nous permet d'oublier en passant les divisions et les discordes, trop fréquentes, hélas! parmi les hommes, en dehors du monde de la science."

A NUMBER of members of the French Association were the recipients of honours during the year covered by the report presented by the Secretary to the recent meeting at Nantes. Among the nominations to professorships are:—M. Maquenne, as professor at the Muséum; MM. Moussous and Denigès, as professors at the Faculté de Bordeaux; MM. Bordier, Broca, Launois and Sambuc, as Fellows of the Faculty of Medicine; MM. Bourquelot, Perrier, Peyrot, Richer and Richet, as members of the Academy of Medicine; and M. Schlagdenhauffen, as associé libre. In the Order of the Légion d'honneur the dignity of Grand Officer was conferred upon MM. Dislère and Himly, de l'Institut; the grade of Commander upon Colonel Renard; the grade of Officer upon MM. Chavanon, Claude Lafontaine, Dubar, Faisans, H. Filhol, Ch. Gauthiot, Dr. Hayem, G. Payelle, Dr. Raymond, Georges Rolland, and Dr. Zaepffel. Among the Chevaliers the Secretary mentions MM. Arnavon, Dr. Barth, Blin, Arth, Boudin, Fernand Faure, A. Gatine, Jules Grouvelle, Dr. Heydenreich, Lebois, Macé de Lépinay, Dr. Alf. Marchand, E. A. Martel, A. Molteni, Pralon, Dr. Jean Rivière, A. Taillefer, Dr. J. Teissier, and Aug. Wallaert. Among the lauréats de l'Académie des sciences, the names are mentioned of Beauregard (prix Godard), Bourquelot (prix Montagne), André Blondel (prix Planté), Durante and Henri Meunier (prix Lallemand), Gaucher and Rémy (prix Montyon), Hébert (prix Cahours), P. Pruvot (prix Bordin), Paul Sabatier (prix Lacaze), Joseph Vallot (grand prix des sciences physiques), Gosselet (prix d'Ormoy). In the Academy of Medicine prizes have been awarded to MM. Censier, Denigès, Destot, Ducor, Grasset, Hallion, Lalesque. This list shows that the Association numbers many active investigators among its members.

THE publications of the Royal Alfred Observatory, Mauritius, have been distributed somewhat irregularly, and most European libraries have only incomplete sets. The announcement in *Symons's Monthly Meteorological Magazine*, that, for convenience of distribution, all surplus copies have been sent to Mr. G. J. Symons, F.R.S., ought, therefore, to be widely known. A list of the publications available is given in that magazine, and applications for any of them should be sent to Mr. Symons, 62 Camden Square, London, N.W., by October 15, when the remaining copies will be allotted.

THE University of Upsala continues to issue a well-printed and well-illustrated *Bulletin* of its Geological Institution. In part 2 of its third volume the *Bulletin* deals with a variety of topics relating to Swedish geology: with graptolites, corals, and mammals; with minerals and mineral veins, and with subjects of chemical and structural geology. A paper by

H. Munthe treats of the vexed question of the interglacial submergence of Great Britain; and being printed in English, it will more readily attract the attention of British geologists. The author first deals with the marine clay at Cleongart, on the western coast of the Mull of Kintyre; and he shows that the idea of the mixed character of the fauna, both as to climate and bathymetrical conditions, arose from considering the fauna generally, whereas in reality there is a distinct series of layers which were deposited under different conditions. He regards the strata as *in situ*, and as indicating a maximum submergence of over 300 feet. He gives reasons, also, for believing that the marine clay at Clava, near Inverness, is likewise a marine deposit *in situ*, and that it indicates a submergence of at least 540 feet. In other localities in Great Britain and Ireland he is disposed to think that certain shelly gravels may have been transported by an ice-sheet from lower to higher levels.

The water question being temporarily in abeyance, the London County Council have employed the interval in issuing a report on the "Bacteriological examination of London crude sewage." It only purports to be an introduction to reports on experiments which are in progress on the filtration of sewage through coke, and contains nothing of significance from a scientific point of view. The flora of sewage has been repeatedly studied before, and that the *B. coli communis* is present in great numbers is hardly news to those acquainted with the subject; on the other hand, some of the statements made are liable to a highly misleading interpretation. We would especially refer to the remark that the presence of the *B. coli communis* in water may be regarded as a "bacteriological method of detecting the pollution of water with minimal quantities of sewage which is of very great delicacy." This organism is, like the poor, always with us, and that its presence is necessarily due to the access of sewage is a quite unwarranted assumption. Again, because a liquid contains bacteria capable of liquefying gelatine, does it follow that this liquid is "also rich in ability to dissolve solid or suspended organic matter"? To justify such statements more than words are necessary, and in a scientific report surely experiments should take precedence of conclusions. Experiments on coke filters in relation to sewage treatment are being vigorously prosecuted in various parts of the country, and the London County Council are showing their appreciation of the importance of the question in likewise directing investigations in this direction; and we trust that the united efforts of so many independent bodies will ultimately yield data which will materially lessen the stupendous difficulties now surrounding the satisfactory disposal of sewage.

The Deutsche Seewarte has issued its twentieth yearly volume of *Aus dem Archiv*, for 1897. Among the various investigations, which are always of a painstaking and valuable character, we would refer to one by Dr. Neumayer and Dr. v. Hasenkamp, entitled "Anemometer Studies." The results confirm those obtained by Mr. Dines and others, with regard to the high values recorded by the Robinson cup-anemometer, and also show that anemometers of similar pattern and size cannot be depended upon to give precisely similar records, but that the constants of each individual instrument must be separately determined. Another important discussion, by Dr. G. Schott, refers to the "bottle-notices" collected by the Seewarte up to the end of the year 1896. The drift of 643 bottles has been examined, and with one or two exceptions the routes have been plotted on charts. Some of the tracks taken are very interesting, and go to disprove the statement sometimes made that the bottles are driven by the prevalent winds. Some instances are given showing that the bottles follow even a weak current, against the wind. About seventy per cent. of the notices refer to the North Atlantic ocean.

In *Das Wetter* for July, Dr. R. Hennig, of Berlin, concludes an interesting investigation of the well-known "cold days" of May, which has appeared in the last four numbers of that journal. In carrying on the discussion the author has examined all the weather charts for the last twenty years, and has given a summary of the special conditions in each of those years. The principal results are arrived at are: (1) That the "cold days" are, with rare exceptions, a yearly recurring phenomenon, but by no means affect the same parts of Europe. (2) The period of the occurrence varies considerably. It may embrace the whole month, but most frequently takes place during the second decade, and mostly lasts for three or four days. (3) The phenomenon generally commences during the occurrence of stormy north-west winds, accompanied with frequent showers of rain, snow or hail. Night frosts and formation of hoar frost sometimes occur during the early period of this unsettled weather, but generally take place after the passage of areas of low barometric pressure. (4) During this cold period an extensive area of high barometric pressure obtains over the ocean adjacent to the western or north-western shores of Europe. This subject has engaged the attention of meteorologists for a number of years, and among the various investigations we would especially refer to those of Dove in 1856, and v. Bezold in 1882.

In consequence of the great development which the study of earthquakes has received in Europe, and especially in Italy, during the last ten years, the need has been felt of a journal devoted exclusively to seismology. Accordingly, in the beginning of 1895, Prof. Tacchini, the well-known Director of the Central Office of Meteorology and Geodynamics at Rome, founded the Italian Seismological Society. Three volumes of the *Bollettino* published by the Society are now complete. Their value will be evident from the notes which we have inserted from time to time. Besides the important notices of earthquakes recorded in Italy, the three volumes contain altogether seventy-six papers, chiefly on earthquakes, though the active volcanoes of the country receive a large share of attention. Most of the papers are in Italian, but a few are written in French; and, as those in other languages are also admissible, it is evident that the *Bollettino* possesses an international character. The Society has at present fifty-three Italian and foreign members, and stands in need of a considerable increase in their number, in order that its usefulness may be maintained and extended.

The Report of Mr. W. E. Hoyle, Keeper of the Manchester Museum, Owens College, shows that much useful work was accomplished during the year 1897-8 in spite of inadequate funds. Specimens of minerals and fossils which could be spared were arranged by Mr. H. Bolton in sets and presented to schools in which they will prove of service. Series of short addresses upon natural science topics were given on Saturday and Sunday afternoons, and were so successful that similar lectures will be delivered during the ensuing session. A museum which carries on work of this character, in addition to publishing useful handbooks—one on the nomenclature of the seams of the Lancashire Lower Coal Measures, by Mr. Herbert Bolton, is now before us—and furnishing material to aid naturalists in their investigations, ought to be given every encouragement. In regard to the acquisition of specimens, Mr. Hoyle points out that the sum of 75*l.* a year, which has for some time been allotted for this purpose, is absurdly inadequate for the principal museum of the city of Manchester, especially when compared with the sum of 2000*l.* expended in the same manner by the city of Liverpool. The Free Library Committee of the Manchester Corporation has shown its appreciation of the work of the Museum by contributing the sum of 400*l.* per annum towards its maintenance, but beyond this no assistance is received from the Corporation. The sum expended on the Manchester Museum, including special donations, is only 2785*l.*, whilst the neighbouring city of Liverpool spends 5700*l.* Bearing this comparison in mind, the citizens of Manchester would do well to consider the following words of a recent American writer on the subject of museums referred to by Mr. Hoyle:—"It is not too much to assert that the level reached in intelligence and organisation by any community may be gauged most accurately by the attention and support afforded to its museums."

THE fifth edition of Mr. L. Cumming's "Electricity treated Experimentally" has just been published by Messrs. Longmans, Green, and Co. A few slight additions and alterations have been made to this useful little work, in order to bring it into touch with the present state of knowledge of the subjects surveyed in it.

THE May number of the *Journal of the Federated Institutes of Brewing* contains an interesting paper on the water supplies of Yorkshire, by Mr. Thomas Fairley. The great variety of waters existing in Yorkshire is remarkable, even when the size of the county is taken into consideration. Mr. Fairley classifies them in convenient tables, and makes useful comments on their origin and properties, both from the hygienic and technical point of view.

IN reference to recent discussions and decisions on the vaccination question, it will be of interest to note that Messrs. Macmillan and Co., Ltd., have now in the press, and will publish early in the autumn, the Milroy lectures on "Vaccination, with special reference to its natural history and pathology," by Dr. Monckton Copeman, Medical Inspector to the Local Government Board, whose name is so widely and favourably known in connection with the new glycerine treatment of vaccine, the use of which is prescribed in the Bill which has now been approved by both Houses of Parliament.

DR. W. GROSSE, of Bremen, has written a small book entitled "Der Aether und die Fernkraefte," compiled from various sources, as a short history of the more recent developments of the researches of Hertz and Roentgen. The remarkable stimulus to scientific investigators produced by the publication of Roentgen's great discovery is indicated by the fact that within a few months the *Beiblätter* was devoting no less than eighty pages per volume to X-rays. "Telegraphy without wires" is treated of by Dr. Grosse with a brave attempt to do equal justice to all who have, or think they have, priority.

"ASTRONOMY for the Young" (London: G. Stoneman, 1898) is the title of a small book of sixty-two pages by Mr. Thynne Lynn. The author describes in very popular and elementary language a few general notions about the earth, her satellite the moon, the sun, the planets, comets and meteors, and lastly the stars, giving the young reader a general notion, in a few words, of the bodies which we see in the heavens by day and night. The book is simply written, and few, if any, technical terms are used, so that it is well adapted to the readers for whom it is intended. Perhaps it might have been better to have omitted the illustration on p. 31, displaying the "phenomena of the heavens;" as a rainbow, halo, aurora, waterspout, a lightning flash, &c., are all jumbled up together, and are more inclined to puzzle than enlighten a young reader.

MR. A. H. EVANS's volume on "Birds," for the Cambridge Natural History, is now so well advanced that Messrs. Macmillan and Co. hope to publish it in the course of September. With few exceptions the illustrations have all been specially drawn for the book by Mr. Lodge, and engraved on wood by O. Lacour. The treatment of the subject throughout is systematic, and the author has taken special pains to describe each bird so minutely that a naturalist or sportsman in the field will have no difficulty in identifying any specimen. The next volume to appear will be the completion of Dr. Sharp's admirable treatise on insects. This may be looked for not later than January.

THE *Revue Scientifique* for July 30 contains a summary of M. Berthelot's recent researches on the relations existing between the energy of light and chemical energy. M. Berthelot's leading idea is that the true chemical equivalent of light energy can only be measured by means of an endothermic irreversible reaction—that is to say, by a reaction which progresses with absorption of energy, and with the formation of products which cannot re-combine spontaneously under the circumstances of the experiment. These conditions exclude many actinometric methods hitherto used. Thus a mixture of hydrogen and chlorine cannot be employed, for in this case the action induced by light is exothermic; the energy liberated is not that which has been received as light, but is almost wholly due to the chemical energy pre-existing in the uncombined hydrogen and chlorine. Photographic actinometers are also excluded for the same kind of reason, as well as from the fact that in some cases the products of the reaction tend to re-combine. Thus metallic silver or silver subchloride and free chlorine produced by the action of light on silver chloride can re-combine spontaneously. The reactions studied by M. Berthelot are the decomposition of nitric acid into nitrogen peroxide, oxygen and water, and the decomposition of iodic acid, hydriodic acid, and oxide of mercury respectively into their elements. It was observed incidentally that the more refrangible rays only are effective in the cases of nitric and hydriodic acid, and that in the decomposition of hydriodic acid a periodide of hydrogen is formed intermediately. Carbon dioxide, and a mixture of carbon monoxide and oxygen were not affected by exposure to sunlight. M. Berthelot is engaged in a deeper study of the energy relationships.

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus sinicus*, ♀) from India, presented by Mr. H. Page; a Rhesus Monkey (*Macacus rhesus*, ♀) from India, presented by Mr. C. E. Bashall; a Common Chameleon (*Chamæleon vulgaris*) from North Africa, presented by Mr. M. Titford; a Smooth-bellied Snake (*Homalosoma lutrix*), a Rufescent Snake (*Leptodira hotambaia*), two Rhomb-marked Snakes (*Trimerorhinus rhombeatus*), five Crossed Snakes (*Psammophis crucifer*), three Puff Adders (*Bitis arietans*) from South Africa, presented by Mr. J. E. Matcham; two Pinche Monkeys (*Midas œdipus*) from Columbia; a Grey Parrot (*Psittacus erithacus*) from West Africa, deposited; two Three-toed Sloths (*Bradypus tridactylus*) from British Guiana, purchased; an Humboldt's Lagothrix (*Lagothrix humboldti*) from the Upper Amazons, a Red-backed Saki (*Pithecia chiropotes*) from Guiana, received in exchange.

OUR ASTRONOMICAL COLUMN.

WOLF'S COMET.—The following is a continued ephemeris for this comet, the positions being stated for Berlin midnight:—

	R.A.	Decl.	Br.
	h. m. s.	° ′	
August 18	5 13 12	+15 20	2·49
22	22 52	14 29	2·50
26	32 13	13 36	2·53
30	5 41 13	+12 39	2·55

On June 18, Prof. Hussey, who rediscovered the comet on the previous day with the Lick 36-inch refractor, found the comet an easy object with the 12-inch telescope (*Ast. Jour.*, 439).

FALL OF A METEORITE IN BOSNIA.—A correspondent has sent us the following extract from the *Foreign Office Annual*, 1898 (No. 2167, "Trade of Bosnia and the Herzegovina for the